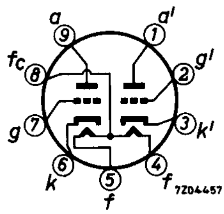
# S.Q. TUBE

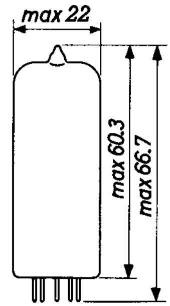
Special quality double triode designed for use in computer circuits.

| QUICK REFERENCE DATA | | | |
|---|---|---|---|
| Life test | 10 000 hours | | |
| Low interface resistance | | | |
| Base | Noval | | |
| Heating | Indirect<br>A.C. or D.C.; Parallel supply | | |
| Heater voltage | $V_f$ | 6.3 or 12.6 | V |
| Heater current | $I_f$ | 640 or 320 | mA |
| Anode current | $I_a$ | 36 | mA |
| Mutual conductance | S | 15 | mA/V |

**DIMENSIONS AND CONNECTIONS** Dimensions in mm

Base: Noval



## CHARACTERISTICS

Column I Nominal value or setting of the tube
II Range values for equipment design: Initial spread
III Range values for equipment design: End of life

| | | I | II | III | |
|---|---|---|---|---|---|
| Heater voltage (pin 8 and 4+5) | $V_f$ | 6.3 | | | V |
| Heater current | $I_f$ | 640 | 605- 675 | | mA |
| Heater voltage (pin 4 and 5) | $V_f$ | 12.6 | | | V |
| Heater current | $I_f$ | 320 | | | mA |
| Anode voltage | $V_a$ | 120 | | | V |
| Grid voltage | $-V_g$ | 2 | | | V |
| Anode current | $I_a$ | 36 | 26- 45 | | mA |
| Mutual conductance | S | 15 | | | mA/V |
| Amplification factor | $\mu$ | 24 | | | |
| Negative grid current | $-I_g$ | | max. 0.2 | max.1.0 | $\mu$A |
| Anode voltage | $V_a$ | 120 | | | V |
| Cathode resistor | $R_k$ | 55 | | | Ω |
| Mutual conductance | S | 15 | 11.2-18.8 | min. 8 | mA/V |
| Anode voltage | $V_a$ | 90 | | | V |
| Grid current | $I_g$ | 250 | | | $\mu$A |
| Anode current | $I_a$ | | 41- 62 | min. 24 | mA |
| Cut-off voltage | $-V_g$ | 14 | | | V |
| Anode voltage | $V_a$ | 150 | | | V |
| Anode current | $I_a$ | | max. 0.2 | | mA |
| Leakage current between cathode and heater | $I_{kf}$ | | max. 15 | max. 30 | $\mu$A |
| Voltage between cathode and heater = 200 V | | | | | |
| Insulation resistance between two electrodes | | | min. 100 | min. 20 | MΩ |

**CAPACITANCES** Each system if applicable

| | | I | II | |
|---|---|---|---|---|
| Anode to cathode and heater | $C_{a/kf}$ | 1.1 | 0.75-1.45 | pF |
| | $C_{a'/k'f}$ | 1.0 | 0.65-1.35 | pF |
| Grid to cathode and heater | $C_{g/kf}$ | 6.0 | 5.3- 6.7 | pF |
| Anode to grid | $C_{ag}$ | 4.0 | 3.4- 4.6 | pF |
| | $C_{a'g'}$ | 4.1 | 3.4- 4.8 | pF |
| Cathode to heater | $C_{kf}$ | 4.0 | | pF |
| Anode to anode other section | $C_{aa'}$ | 0.6 | max. 0.8 | pF |
| Grid to grid other section | $C_{gg'}$ | | max. 0.15 | pF |
| Anode to grid other section | $C_{ag'}$ | | max. 0.1 | pF |

**LIFE**

Production samples are tested to be within the end of life values (column III) during 10 000 hours under the following conditions.

| | | | |
|---|---|---|---|
| Anode supply voltage | $V_{ba}$ | 150 | V |
| Anode resistor | $R_a$ | 1.5 | kΩ |
| Grid supply voltage | $V_{bg}$ | 150 | V |
| Grid resistor | $R_g$ | 62 | kΩ |
| Voltage between cathode and heater (cath. neg.) | $V_{kf}$ | 120 | V |

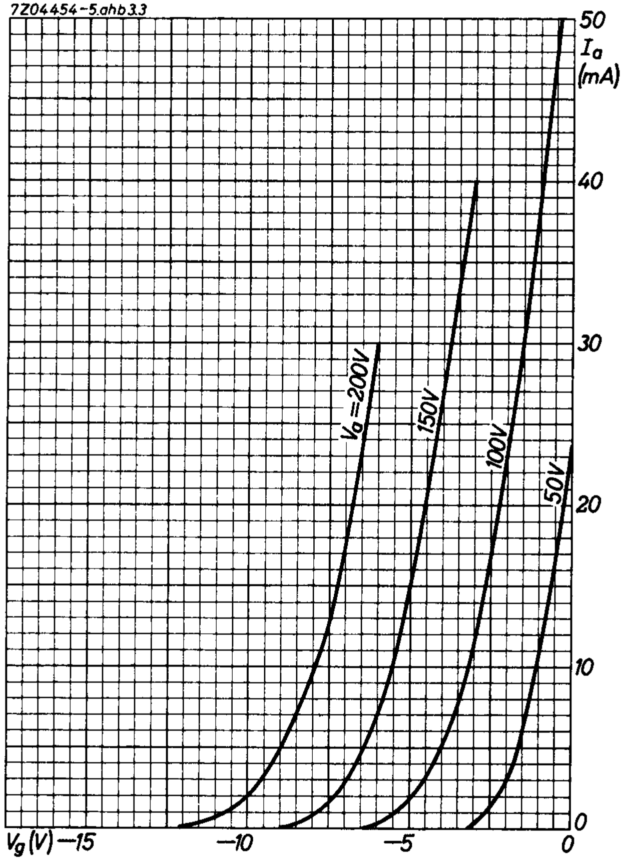
**LIMITING VALUES** (Absolute max. rating system)

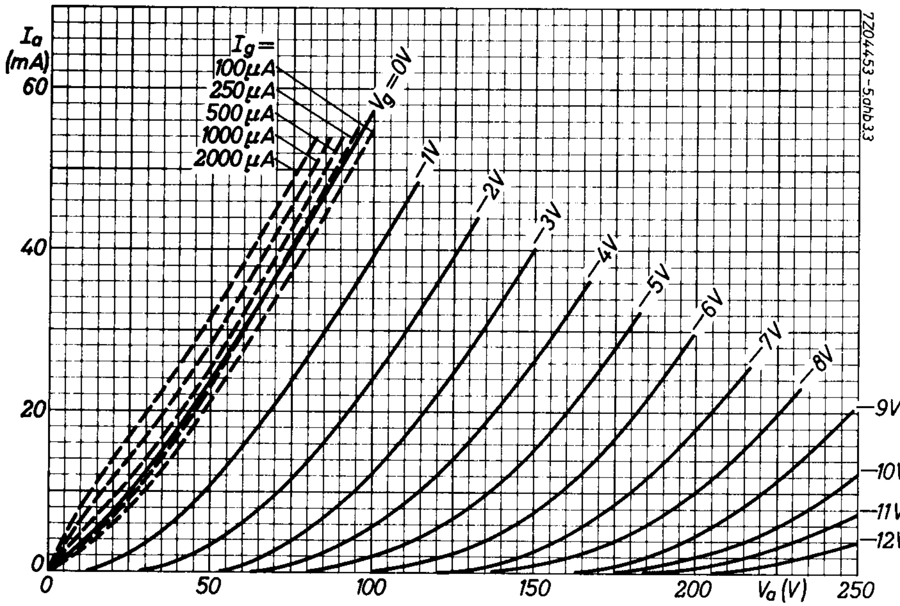
| | | | | |
|---|---|---|---|---|
| Anode voltage | $V_{a_o}$ | max. | 600 | V |
| | $V_a$ | max. | 300 | V |
| Anode dissipation | $W_a$ | max. | 4.5 | W |
| Anode dissipation (both sections) | $W_{a+a'}$ | max. | 8.0 | W |
| Grid voltage | $-V_g$ | max. | 100 | V |
| | $+V_g$ | max. | 1 | V |

**LIMITING VALUES** (continued)

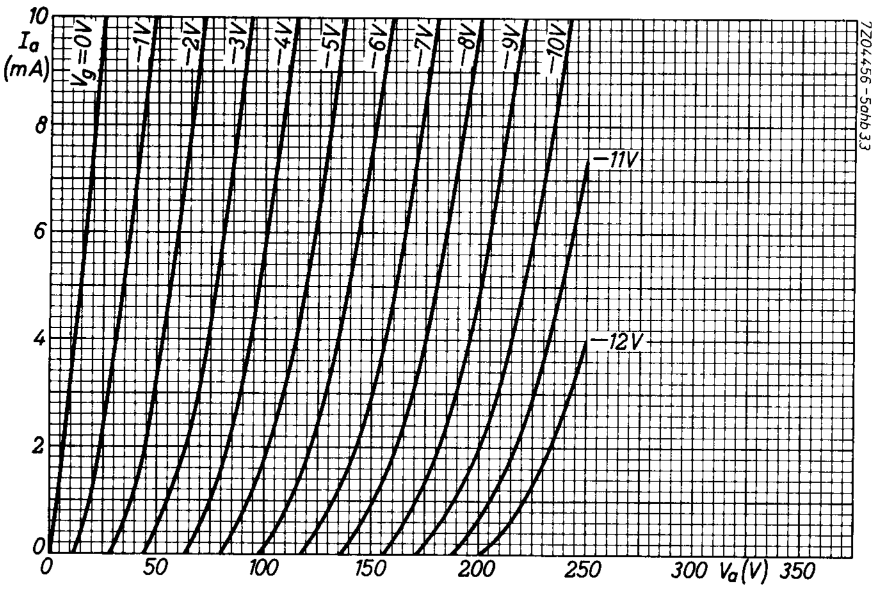
| | | | | |
|---|---|---|---|---|
| Grid voltage, peak | $+V_{gp}$ | max. | 30 | V |
| | $-V_{gp}$ | max. | 200 | V |
| Pulse duration max. 10 µs | | | | |
| Duty factor max. 0.01 | | | | |
| Grid current | $I_g$ | max. | 8 | mA |
| Grid peak current | $I_{gp}$ | max. | 200 | mA |
| Pulse duration max. 10 µs | | | | |
| Duty factor max. 0.01 | | | | |
| Cathode current | $I_k$ | max. | 60 | mA |
| Cathode peak current | $I_{kp}$ | max. | 400 | mA |
| Pulse duration max. 10 µs | | | | |
| Duty factor max. 0.01 | | | | |
| Voltage between cathode and heater | $V_{kf}$ | max. | 200 | V |
| d.c. component | $V_{kf}$ | max. | 120 | V |
| Bulb temperature | $t_{bulb}$ | max. | 160 | °C |
| Grid resistor with automatic bias | $R_g$ | max. | 1 | MΩ |
| Grid resistor with fixed bias | $R_g$ | max. | 0.5 | MΩ |

Heater voltage: The average heater voltage should be 6.3/12.6 V.
Variations of the heater voltage exceeding the range of 6.0/12.0 V to 6.6/13.2 V will shorten the tube life.
The tolerance of heater current (column II) should be taken into account.

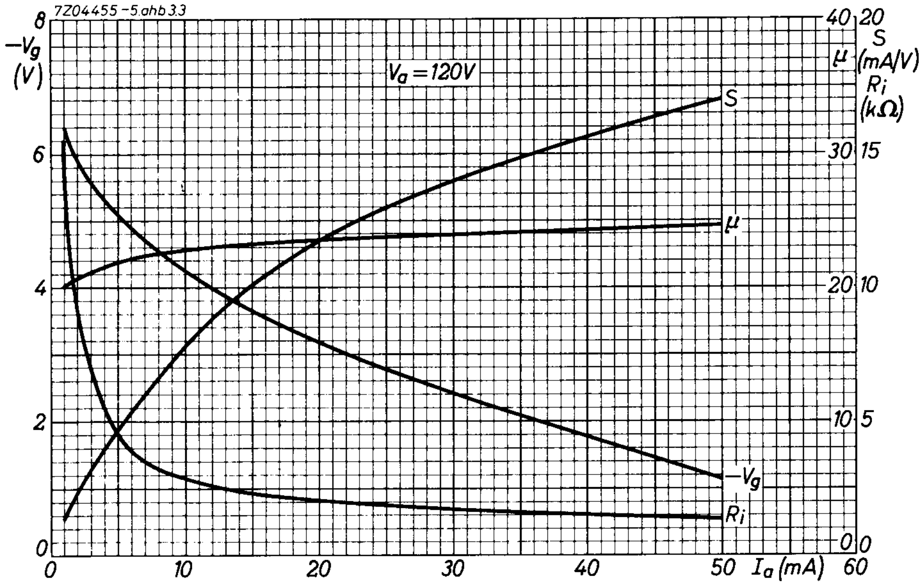

7Z04454-5.ahb3.3
50
$I_a$
(mA)
40
30
20
10
0
$V_a$=200V
150V
100V
50V
$V_g$ (V) —15
—10
—5
0



$I_a$ (mA)
60
40
20
0
$I_g$ =
100 µA
250 µA
500 µA
1000 µA
2000 µA
$V_g$ = 0V
−1V
−2V
−3V
−4V
−5V
−6V
−7V
−8V
−9V
−10V
−11V
−12V
0
50
100
150
200
$V_a$ (V)
250
7Z04453-5ahb33

10
$I_a$ (mA)
8
6
4
2
0
$V_g$ = 0V
−1V
−2V
−3V
−4V
−5V
−6V
−7V
−8V
−9V
−10V
−11V
−12V
0
50
100
150
200
250
300
$V_a$ (V)
350
7Z04456-5ahb33


7Z04455 -5.ahb 3.3
$V_a = 120V$
$-V_g$ (V)
S (mA/V)
μ
$R_i$ (kΩ)
S
μ
$-V_g$
$R_i$
$I_a$ (mA)
0
10
20
30
40
50
60
2
4
6
8
5
15

PHILIPS

Data handbook

Electronic components and materials

**E182CC**

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| 5 | 5 | 1968.12 |
| 6 | 6 | 1968.12 |
| 7 | 7 | 1968.12 |
| 8 | FP | 2000.12.04 |